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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,422	09/21/2005	Peter Andrin	DC8507 US PCT	3305

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EXAMINER	
ENIN-OKUT, EDUE	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/550,422	ANDRIN ET AL.	
	Examiner	Art Unit	
	Edu E. Enin-Okut	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 23-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 23-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 September 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/18/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Applicant's claim for the benefit of a prior-filed application, U.S. Provisional Patent Application No. 60/457,280, filed on March 25, 2003, under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 35 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 35 recites a "… maleic anhydride modified polymer with the thermoplastic polymer, partially fluorinated polymers and liquid crystalline polymer or mixtures thereof." However, claim 34 recites "… a thermoplastic polymer selected from the group consisting of melt processible polymers, partially fluorinated polymers, thermoplastic elastomers, liquid crystalline polymers, polyolefins, polyamides, aromatic condensation polymers, and mixtures thereof."

It appears that Applicant is using a thermoplastic polymer as a group in claim 34 but then is using the term "thermoplastic polymer" as a species in claim 35.

4. Claim broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to

whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 35 recites the broad recitation "about 1 wt% to 30 wt%" , and the claim also recites "preferably 5 wt% to 25 wt%" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-2, 36-37, 39-42 and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by Davis, U.K. Patent Application Publication No. GB 2 326 017 A (cited in IDS).

Regarding claim 1, Davis discloses a process for joining a gas diffusion layer to a separator plate of an electrochemical cell (Abstract; p. 3, lines 28-30), wherein the gas diffusion layer comprises a porous body (p. 1, lines 29-31), and the separator plate comprises at least one landing surface formed on a surface of the separator plate (p. 5, lines 26-28), and the separator plate and landing surface comprising a polymer and conductive filler (p. 4, lines 31-33), the process comprising the step of welding the landing surface to the gas diffusion layer by impregnating some of the polymer on the landing surface within a portion of the porous body (p. 6, line 4 – p. 7, line 8).

Regarding claim 2, Davis discloses a welding step is selected from heat lamination and hot bonding techniques (p. 6, lines 4-7, 15-20).

Regarding claim 34, Davis discloses that the polymer is a thermoplastic polymer selected from melt processible polymers [polycarbonates], thermoplastic elastomers [ABS], polyolefins [polypropylene], polyamides, and aromatic condensation polymers [polycarbonates] (p. 5, lines 15-19).

Regarding claim 36, Davis discloses that the conductive filler is graphite fiber or graphite powder (p. 4, line 33- p. 5, line 1).

Regarding claim 37, Davis discloses that the landing surface comprises a polymer rich outer layer (p. 6, lines 14-20).

Regarding claim 39, Davis discloses an electrochemical cell component comprising a gas diffusion layer welded to a separator plate using the process of claim 1 (Abstract).

Regarding claim 40, Davis discloses an electrochemical cell comprising a gas diffusion layer welded to a separator plate using the process of claim 1 (Abstract).

Regarding claim 41, Davis discloses an electrochemical cell comprising the electrochemical cell component of claim 39 (Abstract).

Regarding claim 42, Davis discloses an electrochemical cell stack comprising a plurality of the electrochemical cells of claim 41 (Abstract; p. 2, lines 20-21; p. 3, lines 22-23).

Regarding claim 44, Davis discloses an electrochemical cell component of claim 39, wherein the surface of the separator plate comprises open flow field channels and the gas diffusion layer does not sink into the open flow field channels (p. 6, lines 20-21).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 3-4, 23-29 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis in view of Ledjeff et al., U.S. Patent No. 5,733,678 (cited in IDS), Burke, U.S. Patent No. 4,673,450 (cited in IDS), and Marianowski, U.S. Patent No. 6,261,710.

Davis is applied and incorporated herein for the reasons above.

Regarding claim 3, Davis does not expressly teach that the welding step is resistance welding.

Ledjeff teaches that the thermoplastic polymer individual components of a fuel cell, such as its current collector and current distributor, are held together by a bonding process without seals like welding or gluing (Abstract; 8:39-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a welding technique to join the gas diffusion layer of Davis to its separator plate, as taught by Ledjeff, because it produces a component that requires either no sealing at all or very little sealing material (see Ledjeff, 5:56-60).

However, Ledjeff does not expressly teach resistance welding.

Burke teaches a method of welding together graphite fiber reinforced thermoplastic laminates that includes placing the two separate pieces to be welded together adjacent each other and applying pressure to the outer sides of the parts (Abstract; 1:50-54). A pair of electrodes is placed on the opposite outer sides of the parts to be welded (1:54-55). A spot weld or weld seam, with good lamination in the weld

area, can be accomplished applying voltage in the range of 20 to 40 volts and amperage in the range of 30 to 40 amps using the electrodes for approximately 5 to 10 seconds (1:44-48, 1:55-57, 2:37-45).

Therefore, one of ordinary skill in the art at the time of the invention would have found it obvious to use a resistance welding taught by Burke as the welding technique of Ledjeff to join the gas diffusion layer of Davis to its separator plate because it produces a bond that lowers contact resistance between the joined components thereby promoting better electrical conductivity (see Marianowski, 5:21-23, 6:19-24).

Regarding claim 4, Davis teaches (a) placing the landing surface in contact with the gas diffusion layer (p. 3, lines 28-30; p. 6, lines 4-7); and, (c) applying pressure to the landing surface and gas diffusion layer to allow the molten polymer to impregnate into the portion of the porous body (p. 6, lines 4-7).

However, Davis does not expressly teach (b) applying an electrical current between the gas diffusion layer and the separator plate to produce localized heat at the landing surface sufficient to melt the polymer in the landing surface and produce molten polymer; or, (d) ceasing to apply the electrical current to allow the molten polymer to cool and solidify.

Burke, discussed above, teaches applying voltage and amperage across electrodes sufficient to soften a thermoplastic material in surface contact between the electrodes; and, cooling those parts in the surface contact area to form a weld (claim 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to form a weld using resistance welding, as taught by Burke, to apply the electrical current between the gas diffusion layer and separator plate of Davis to melt the polymer at the plate's landing surface, and to stop the current to allow the melted surfaces to cool and form a seam, because a weld with good lamination in the weld area can be produced.

Regarding claims 23-24, Davis does not expressly teach the electrical current is the electrical current is between about 0.01 amperes/mm^2 and about 5 amperes/mm^2, its voltage is between about 1 and

about 25 volts and the current is applied for a time from about 0.5 to about 100 seconds; or, the electrical current is between about 0.8 and about 1.1 amperes/mm^2.

However, Burke, discussed above, teaches forming a weld bond between thermoplastics, with good lamination in the weld area, by applying voltage in the range of 20 to 40 volts and amperage in the range of 30 to 40 amps using the electrodes for approximately 5 to 10 seconds (1:55-57, 2:37-45).

It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art (e.g., *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)). See MPEP 2144.05 (I).

Further, the courts have also held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art (e.g, *In re Aller*, 105 USPQ 233). See MPEP 2144.05 (II).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply current and voltage to the diffusion layer and separator plate of Davis during the welding process, as taught by Burke, to sufficiently join those components together by creating good lamination in the weld area without damaging those components.

Regarding claims 25-27, Davis teaches applying heat and pressure to fuse a grooved, thermoplastic bipolar plate to adjacent, porous electrode assemblies (p. 1, lines 29-31; p. 5, lines 26-28; p. 6, lines 4-28).

Davis does not expressly teach the ranges of pressure applied as recited in these claims.

Burke teaches a method of welding together graphite fiber reinforced thermoplastic laminates that includes applying pressure to the outer sides of the parts in the range of 50 to 100 psi during the welding process (Abstract; 1:50-54, 2:24-28).

It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art (e.g., *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)). See MPEP 2144.05 (I).

Further, the courts have also held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art (e.g, *In re Aller*, 105 USPQ 233). See MPEP 2144.05 (II).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply pressure to the diffusion layer and separator plate of Davis during the welding process, as taught by Burke, to sufficiently join those components together by creating good lamination in the weld area without damaging those components.

Regarding claim 28, Burke, discussed above, teaches that the electrical current is applied using external electrodes (1:54-55).

Regarding claim 29, Ledjeff, discussed above with respect to claim 3, also teaches a welding step that is frictional or high frequency welding (8:49-9:6).

Regarding claim 43, Davis does not expressly teach that the electrochemical cell component has a resistivity less than a resistivity of a system comprising a gas diffusion layer that is not welded to a plate.

However, it has been held that either anticipation or obviousness exists where applicant claims a composition in terms of a function, property or characteristic, and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference (e.g., *In re Best*, 562 F.2d 1252, 1255 n.4, 195 USPQ 430, 433 n.4 (CCPA 1977)). See MPEP 2112 (III).

Further, Marianowski teaches that joining components using a welding technique, such as resistance welding, creates a bond that lowers contact resistance between the joined components promoting better electrical conductivity (5:21-23, 6:19-24).

Therefore, one of ordinary skill in the art would appreciate that the electrochemical cell component of Davis, with its diffusion layer and separator plate welded together as taught by Davis, Ledjeff, Burke and Marianowski, produces a cell component with a resisitivity lower than a component with the diffusion layer that is not welded to the plate.

10. Claims 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis and Ledjeff et al. as applied to claim 29 above, further in view of Scherer, U.S. Patent No. 3,860,468.

Davis and Ledjeff are applied and incorporated herein for the reasons above.

Regarding claim 30, the limitations recited in this claim have been addressed above with respect to claims 4 and 29, except (b) applying a vibrational force between the separator plate and the gas diffusion layer to produce localized heat at the landing surface sufficient to melt the polymer at the landing surface; and (d) ceasing to apply the vibrational force to allow the molten polymer to cool and solidify.

Scherer teaches a method of friction welding two thermoplastic parts together in predetermined alignment with each other comprising cyclically moving the parts relative to one another thereby setting up a relative vibration between the two parts, whereby opposing forces are substantially equal while pressing the two parts into surface contact with each other for a time sufficient to melt the contacting surfaces by frictionally induced heat, stopping the relative vibration with the parts in predetermined alignment, and holding the parts in predetermined alignment with said surfaces pressed into contact with each other until the melted thermoplastic resin hardens (Abstract).

Davis, Ledjeff and Scherer are analogous art because they are concerned with the welding of thermoplastic parts to join those parts together.

Therefore, one of ordinary skill in the art at the time of the invention would have found it obvious to form a weld using vibration welding, as taught by Scherer, to apply the vibrational force between the gas diffusion layer and separator plate of Davis to melt the polymer at the plate's landing surface, and to

stop its application to allow the melted surfaces to cool and form a seam, to form a welded component that requires either no sealing or very little sealing material (see Ledjeff, 5:56-60).

Regarding claim 31, Davis does not expressly teach that the vibrational force is applied at a frequency of between about 100 and about 500 cycles per second for a time from 3 to about 100 seconds at an amplitude of between about 0.5 and about 5 mm.

Scherer also teaches that its method for friction welding thermoplastic parts together, discussed above, includes oscillating the two parts relative to one another through a displacement of small amplitude, the vibration having a frequency of about 100 cycles/second and the vibrations being such as to produce a relative movement between the contacting surfaces of between 2 and 8 millimeters during each half cycle of vibration (claim 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply a vibrational force at a frequency and amplitude as taught by Scherer to weld together the diffusion layer and separator plate of Davis for the reasons discussed above with respect to claim 30.

As to applying the vibrational force for a time from 3 to about 100 seconds, one of ordinary skill in the art would find it obvious to apply the method taught by Scherer for a time sufficient to melt the contacting surfaces of the diffusion layer and separator plate of Davis by frictionally induced heat to facilitate the subsequent bonding of those surfaces (see Scherer, Abstract).

Regarding claims 32-33, Davis teaches applying heat and pressure to fuse a grooved, thermoplastic bipolar plate to adjacent, porous electrode assemblies (p. 1, lines 29-31; p. 5, lines 26-28; p. 6, lines 4-28).

Davis and Ledjeff do not expressly teach the ranges of pressure applied as recited in these claims.

Scherer teaches clamping the parts together to create a pressure at the surfaces to be welded of 15 to 35 kg/cm^2 (i.e., 198 to 412 psig) (Abstract; 3:30-37).

It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art (e.g., *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)). See MPEP 2144.05 (I).

Further, the courts have also held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art (e.g, *In re Aller*, 105 USPQ 233). See MPEP 2144.05 (II).

Thus, one of ordinary skill in the art at the time of the invention would have found it obvious to apply a force to diffusion layer and separator plate of Davis during the welding process, as taught by Scherer, to urge the mating surfaces of the parts together and promote the melting of the mating surfaces due to the friction set up between the parts (see Scherer, 3:44-47).

11. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis in view of Takagi et al., U.S. Patent No. 7,008,991.

Davis is applied and incorporated herein for the reasons above.

Regarding claims 35, Davis does not expressly teach that the polymer is a blend of about 1 wt % to about 30 wt %, preferably about 5 wt % to about 25 wt %, of maleic anhydride modified polymer with the thermoplastic polymer, partially fluorinated polymers and liquid crystalline polymer or mixtures thereof.

Takagi et al. teaches a thermoplastic resin composition comprising two different thermoplastic resins (component A and component B), conductive carbon black (component C), and conductive carbon black having a larger specific surface area than that of component C or hollow carbon fibril (component D) (Abstract). The thermoplastic resins usable as component A are principally those classified as amorphous thermoplastic resins, such as a styrene-maleic anhydride copolymer resin, and the thermoplastic resins usable as component B are principally those designated as crystalline thermoplastic resins (2:41-47, 3:1-13, 3:31-36). The resin composition comprises the two thermoplastic resins

combined in such a ratio that component A will be 5 to 65 parts by weight and component B will be 95 to 35 parts by weight in 100 parts by weight of the two thermoplastic resins combined (9:12-19).

Davis and Takagi are analogous art because they are both concerned with the composition of a thermoplastic resulting in good electrical properties and moldability.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the polymer composition of Takagi, with composition components in the percentage ranges as taught by Takagi, in the separator plate of Davis to produce a component with improved electroconductivity and antistatic properties with no comprises in mechanical strength (see Takagi, 2:16-20, 10:43-54).

Davis as modified by Takagi does not teach the claimed percentage of the composition components.

It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art (e.g., *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)). See MPEP 2144.05 (I).

Further, the courts have also held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art (e.g, *In re Aller*, 105 USPQ 233). See MPEP 2144.05 (II).

Double Patenting

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In*

re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claims 39-44 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 and 12-24 of copending Application No. 10/550,423.

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-4 and 12-24 of the co-pending application encompass the limitations of claims 39-44 in the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

14. Claims 1-4 and 23-44 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 and 27-52 of copending Application No. 10/550,424 in view of Ledjeff et al., U.S. Patent No. 5,733,678 (cited in IDS).

Although the conflicting claims are not identical, they are not patentably distinct from each other because one of ordinary skill would appreciate that the process of Application No. 10/550,424 can be applied to join a diffusion layer to a separator plate.

Application No. 10/550,424 (Application No. '424) teaches welding together a first coolant plate to an adjacent, second coolant plate, both plates made of a polymer and a conductive filler, in order to seal the first plate to the adjeacent plate (claim 1).

Application No. '424 does not expressly teach joining a gas diffusion layer to a separator plate.

Ledjeff teaches that the thermoplastic polymer individual components of a fuel cell, such as its current collector and current distributor, are held together by a bonding process without seals like welding or gluing (Abstract; 8:39-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a welding, as taught by Application No. '424, to join the gas diffusion layer of Ledjeff (i.e., current distributor) to its separator plate (i.e., current collector) because it produces a component that requires either no sealing at all or very little sealing material (see Ledjeff, 5:56-60).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

15. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Kurz et al., U.S. Patent Application No. 2005/0017055, discloses a method of producing a porous flow field material for a bipolar separator plate that includes bonding a single layer of wire mesh or bonding together at least two layers of wire mesh to form a porous flow field material, wherein the bonding is achieved by diffusion bonding, continuous resistance welding, continuous sintering, or a combination thereof.
- Nishi et al., U.S. Patent Application No. 2006/0054269, discloses a method for manufacturing a fuel cell separator for sandwiching from both sides via diffusion layers an anode and a cathode disposed on an electrolyte membrane. This manufacturing method includes mixing a thermoplastic resin and a conductive material to make a mixture, forming a separator starting material with the mixture, and irradiating a contact face of this separator starting material with an electron beam, hardening the contact face of the separator.

Correspondence / Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Edu E. Enin-Okut** whose telephone number is **571-270-3075**. The examiner can normally be reached on Monday-Thursday, 8 a.m. - 4 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edu E Enin-Okut/
Examiner, Art Unit 1795

/Susy Tsang-Foster/
Supervisory Patent Examiner, Art Unit 1795